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Monsanto

Monsanto Chemical Company
500 Monsanto Ave.
Sauget, Illinois 62206-1198
Phone: (618) 271-5835

L 1630200005 - St. Cla.
Sauget Sites - Sauget
Superfund - Technical

L 1631210006 - St. Cla.
Monsanto RT 3 Site Sau.
Superfund - Technical

April 28, 1988

Mr. Bharat Mathur, Deputy Manager
Division of Land Pollution Control
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Mr. George E. Addison
Remedial Projects Director
USEPA, Region V
230 South Dearborn Street
Chicago, Illinois 60604

Gentlemen:

Attached are geologic logs, construction details, and location maps for the new wells installed at the W. G. Krummrich landfill and Route 3 Drumsite for your information.

Sincerely,

Max W. McCombs
General Superintendent
Government & Environmental Affairs

/bjj
Attachments

SAMPLE/CORE LOG

BORING/WELL: GM-54A PROJECT NO: NO308SG3 PAGE: 1

SITE LOCATION: Monsanto Company, Sauget, Illinois DRILLING STARTED: 10/6/87 DRILLING COMPLETED: 10/6/87

TOTAL DEPTH DRILLED: 39 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Split Spoon, Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 5 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: None DRILLING METHOD: Auger (4-1/4" I.D.)

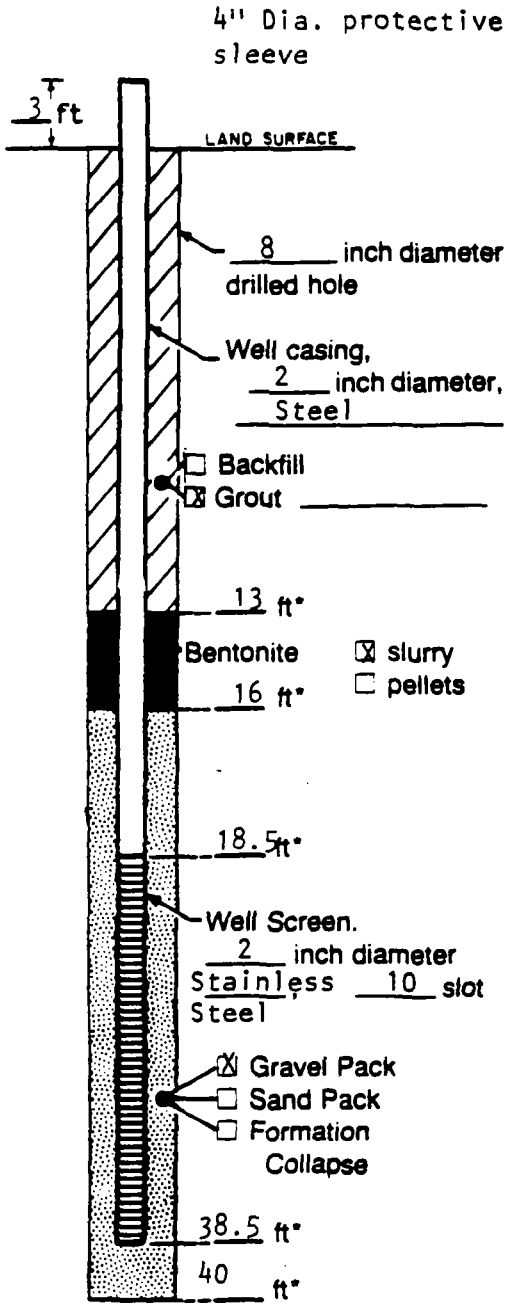
DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Kent HELPER: Quentin

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
	5	7	1.5	2-2-	Silt, brown, dry.
				1-2	
	10	12	1.5	2-4-	Silt, brown (10.0'-10.5') grading into a fine sand,
				3-4	light brown with 20-25 percent silt. Dry.
	15	17	2.0	1-3-	Sand, fine, gray-brown (15'-16') silt, brown
				6-6	(16'-16.3') grading into a fine sand with 20-25
					percent silt (16.3'-17'), wet.
					Note: "A-rods" show wet line at ~12'.
	20	22	2.0	6-9-	Sand, fine, gray-brown with 10-15 percent silt
				15-26	grading into a fine sand, brown with 20-25 percent
					silt (21'-22'), wet. Wood cuttings are coming
					up from auger flytes.
*	25	27	0.5	2-2-	Sand, medium to coarse, brown with assorted colors,
				3-3	wet.
	30	32	2.0	1-2-	Same as above.
				2-6	
	35	37	2.0	3-4	Sand, medium, light brown to gray.
				6-8	
*					Second attempt: first core barrel at this depth was
					empty - however, blow counts are from first
					attempted sample.

GERAGHTY & MILLER, INC.
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto/N0808SG3 Well GM-54A

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 10/6/87

Drilling Method Hollow Stem Auger

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Techniques(s) and Date(s)
Surging with compressed air
10/13/87

Fluid Loss During Drilling ~ 50 gallons

Water Removed During Development 100 gallons

Static Depth to Water 15 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield 1-2 gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground water monitoring in the "shallow" zone.

Remarks

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-54B PROJECT NO: NO308SG3 PAGE: 1

SITE LOCATION: Monsanto Company Sauget, Illinois DRILLING STARTED: 9/28/87 DRILLING COMPLETED: 9/29/87

TOTAL DEPTH DRILLED: 93 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Flume or Split Spoon Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 10 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: Bentonite & Water DRILLING METHOD: Hydraulic (mud) Rotary

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Chris Hebel HELPER: Dave Ellis

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
9/28	0	10		Flume	No sample collected.
	10	20		Flume	Silt, and sand, fine; brown.
	20	30		Flume	
	30	40		Flume	
	Sample	collec	ted		
	40	50		Flume	Sand, fine to medium (75%) brown; silt (25%)
					coarsening downwards to sand, medium to coarse.
9/29	50	60		Flume	Sand, fine to coarse (85%) silt (15%) brown; with a
					lot of lignite.
	60	70		Flume	At 65' wood chips were coming out of flume. Material
					is same as above with wood.
	70	80		Flume	At 72' hit some kind of obstruction (wood) through it
					at 75'. Material is same as above.
	80	90			Same as above.
	87	89	2	Split	Sand, medium to coarse, gray; well sorted. Only 6"
				Spoon	of recovery was virgin formation. The other 18"
					was backwash.
	90	93		Flume	Same as above.

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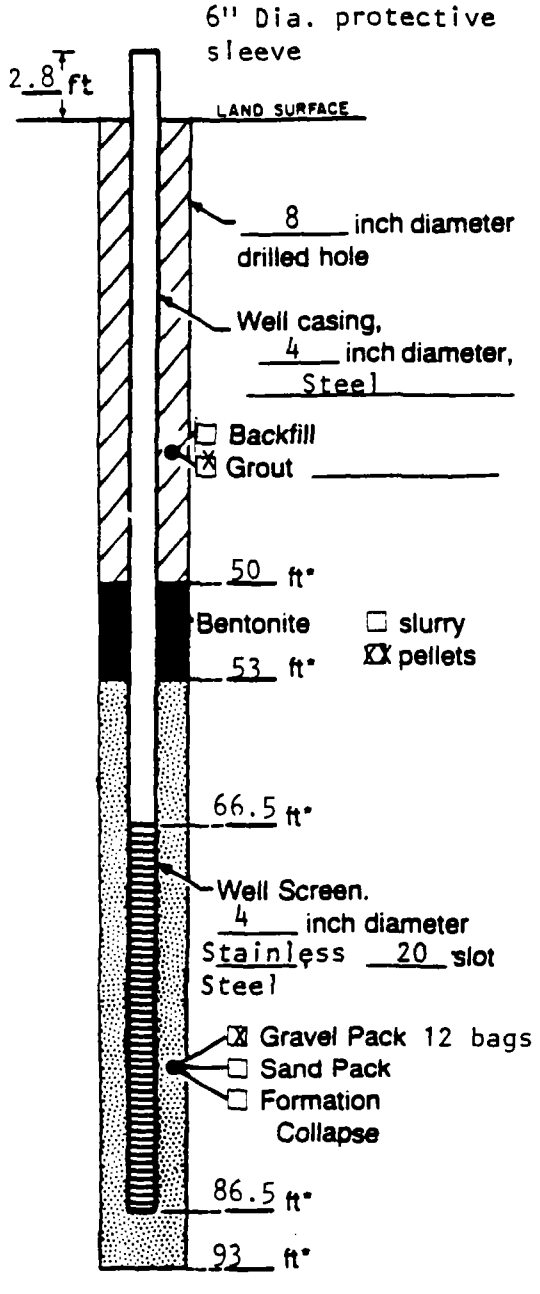
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto/N0308SG3 Well GM-54B

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 9/29/87 - 9/30/87

Drilling Method Hydraulic (mud) Rotary

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid Polymer Free Bentonite and Hydrant Water

Development Techniques(s) and Date(s)

Surging with compressed air

10/13/87

Fluid Loss During Drilling ~500 gallons

Water Removed During Development ~1,000 gallons

Static Depth to Water ~15 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield >10 gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground water monitoring in the "intermediate" zone.

Remarks Relatively high yielding well

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-55C PROJECT NO: NO896WG1 PAGE: 1 of 2

SITE LOCATION: Kirkland & Ellis Sauget, Illinois DRILLING STARTED: 9/30/87 DRILLING COMPLETED: 10/1/87

TOTAL DEPTH DRILLED: 131 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Flume or Split Spoon Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 10 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: Bentonite & Water DRILLING METHOD: Hydraulic (mud) Rotary

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Chris Hebel HELPER: Dave Ellis

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
9/30	0	10		Flume	No sample - Silt and clay gray-black. Too fine to
					to fall out of suspension of mud.
	10	20		Flume	Silt and clay, gray-black.
	20	30		Flume	Same as above with some wood. Driller describes
					formation drilling like "smooth clay."
	30	40		Flume	Same as above.
	40	50		Flume	Same as above grading into sand, fine. Rods
					started bouncing at about 49'.
	50	60		Flume	Same as above (fine sand). The sand is not falling
					out of suspension due to thick drilling fluid.
	60	70		Flume	Same as above - start to notice lignite.
10/1	70	80		Flume	Same as above - coarsening with depth. Higher
					percentages of medium to coarse sand.
	80	90		Flume	At 83' driller thought he hit some wood or boulder.
					Material is the same as above. No wood seen in
					pit. Broken rock chips.
	90	100		Flume	Sand, medium to coarse with gravel.
	97	97	0.75	29-42	Sand, medium, gray with gravel.
				50/1"	
	100	110		Flume	Same as above - at 100' to 101' and 107' the rods
					were bouncing due to cobbles. Pieces of broken
					rock seen in flume sample. At 107' rods were
					bouncing and drilling was more difficult.

SAMPLE/CORE LOG (Cont.d)

BORING/WELL: GM-55C PREPARED BY: B. Blum PAGE: 2 of 2

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
10/1	100	110		Flume	Flume sample has a lot of angular material, coarse
(cont)					sand and gravel size. In addition, pods of silt
					are present. Most likely till.
	110	118		Flume	Same as above. Rods were jumping from 105' to 106'.
	118	119.5	1.5	76-90-	Sand, medium to coarse with gravel in a matrix of
				100	fine sand, silt, gray; most likely till.
	120	131		Flume	Same as above. Refusal.

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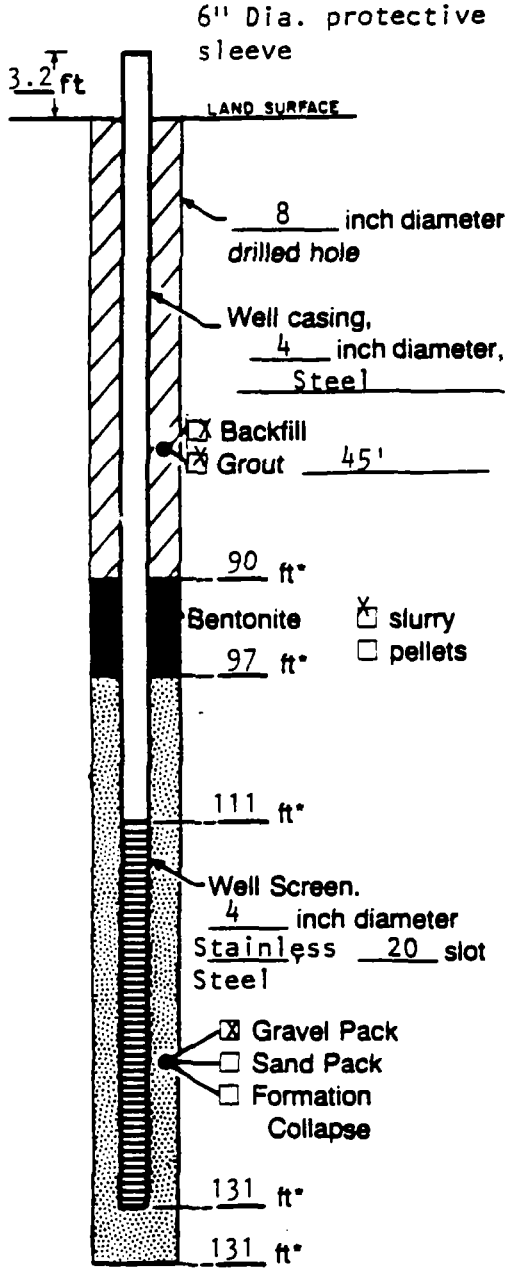
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Kirkland & Ellis N0896WG1 Well GM-55C

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 10/1, 10/2, 10/5/87

Drilling Method Hydraulic (mud) Rotary

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid Polymer Free Bentonite and Hydrant Water

Development Techniques(s) and Date(s)

Surging with compressed air

10/8, 10/9/87

Fluid Loss During Drilling ~500 gallons

Water Removed During Development ~1,000 gallons

Static Depth to Water 36 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield <10 gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground water monitoring in the "deep" zone.

Remarks

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-56C PROJECT NO: NO896WG1 PAGE: 1

SITE LOCATION: Kirkland & Ellis Sauget, Illinois DRILLING STARTED: 10/5/87 DRILLING COMPLETED: 10/6/87

TOTAL DEPTH DRILLED: 121 FT HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Flume or Split Spoon Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 10 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: Bentonite & Water DRILLING METHOD: Hydraulic (mud) Rotary

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Chris Hebel HELPER: Dave Ellis

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
10/5	0	10		Flume	Clay and silt - gray grading into sand, fine, light
					brown.
	10	20		Flume	Clay and silt, with sand, fine, gray and brown.
	20	30		Flume	Same as above. Trace sand is coarsening slightly.
	30	40		Flume	Same as above.
	40	50		Flume	Same as above to 45'. Sand 45-50'.
	50	60		Flume	Sand, medium, gray-brown; some coarse sand and
					gravel.
	60	70		Flume	Same as above with some pebbles too.
	70	80		Flume	Same as above. At 80' drilling through cobbles or
					boulders.
	80	90		Flume	Same as above. Hit cobbles at 83'.
	90	100		Flume	Same as above.
10/6	100	107		Flume	Same as above.
	108	109	1.0	Split	Clay, gray with sand, medium to coarse. (Coarse
				Spoon	material may be backwash).
				19-50-	
				100/4"	
	110	121			Sand, medium to coarse, with broken rock chips
					(from boulders or cobbles). Most likely till.
					Refusal.

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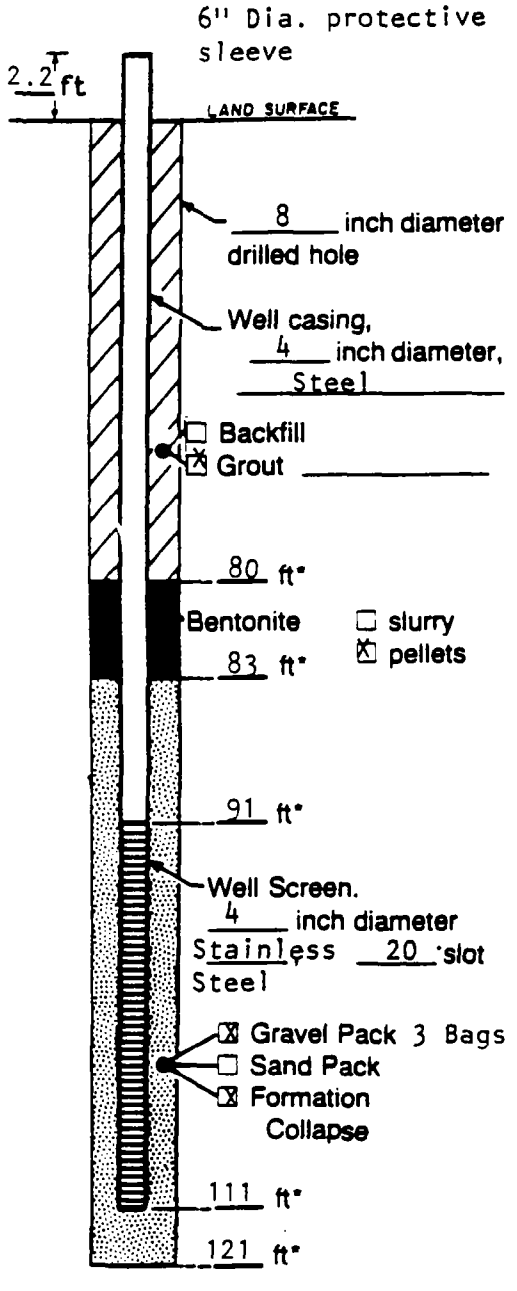
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Kirkland & Ellis N0896WG1 Well GM-56C

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 10/6, 10/7/87

Drilling Method Hydraulic (mud) Rotary

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid Polymer Free Bentonite and Hydrant Water

Development Techniques(s) and Date(s)

Surging with compressed air

10/13, 10/14/87

Fluid Loss During Drilling ~500 gallons

Water Removed During Development ~1,000 gallons

Static Depth to Water 36 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield ~10 gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground water monitoring in the "deep" zone.

Remarks

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-57C PROJECT NO: NO896WG1 PAGE: 1

SITE LOCATION: Kirkland & Ellis Sauget, Illinois DRILLING STARTED: 10/7/87 DRILLING COMPLETED: 10/9/87

TOTAL DEPTH DRILLED: 116 FT HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Flume or Split Spoon Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 10 ft

LAND-SURFACE ELEVATION: ( ) SURVEYED ( ) ESTIMATED DATUM:

DRILLING FLUID USED: Bentonite & Water DRILLING METHOD: Hydraulic (mud) Rotary

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Chris Hebel HELPER: Dave Ellis

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
10/7	0	10		Flume	Large stone and fill consisting of brick, cinder, and various sorted gravels and sand.
	10	20		Flume	Same as above.
	20	30		Flume	Same as above from 20-23 feet grading into a sand, fine with silt.
	30	40		Flume	Same as above.
10/8	40	50		Flume	Same as above.
	50	60		Flume	Sand, fine and medium with silt and some gravel.
	60	70		Flume	Same as above.
	70	80		Flume	Hit wood obstruction at 72'. Material is sand, fine to medium with gravel.
10/9	80	90		Flume	Hit cobbles and boulders at 83'-86'.
	90	97		Flume	Same as above.
	97	99	0.75	24-13-14-25	Sand, fine to coarse, gray (30%), gravel (30%), pebbles and broken rock chips (20%), silt and clay (20%).
	100	110			Hit Boulders at 101'-102', 107'-108'. Same as above.
	110	116			In boulders. Same as above. Drills like till.
					Refusal.

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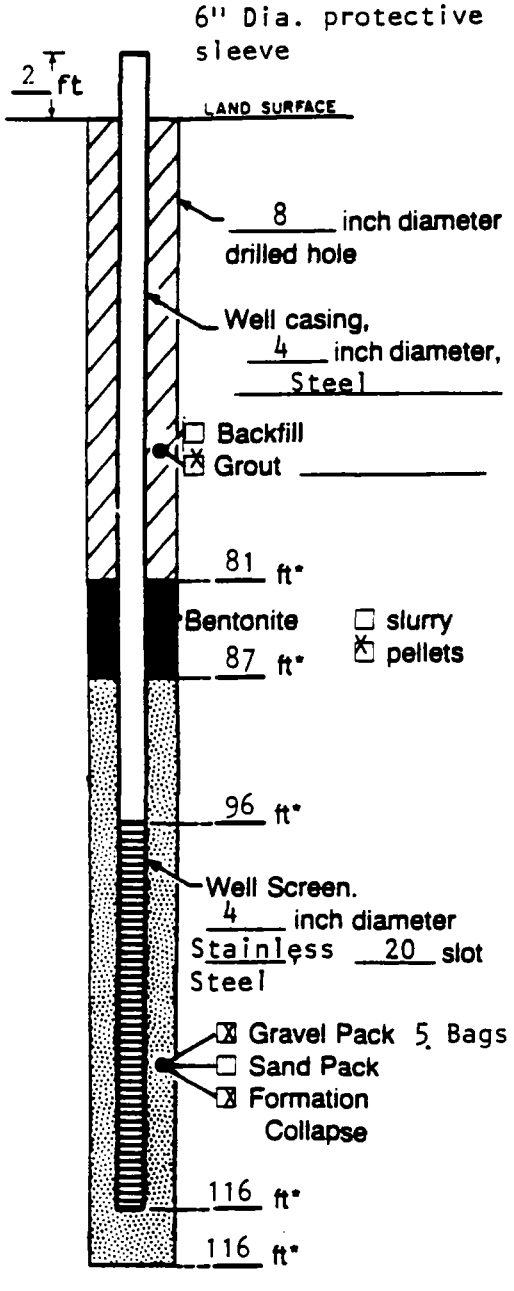
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Kirkland & Ellis N0896WG1 Well GM-57C

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 10/9/87

Drilling Method Hydraulic (mud) Rotary

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid Polymer Free Bentonite and Hydrant Water

Development Techniques(s) and Date(s)

Surging with compressed air

10/13/87

Fluid Loss During Drilling ~500 gallons

Water Removed During Development ~1,000 gallons

Static Depth to Water 38 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield _____ gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose _____

Remarks Ground water monitoring in the "deep" zone.

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-58A PROJECT NO: NO308SG3 PAGE: 1

SITE LOCATION: Monsanto Company, Sauget, Illinois DRILLING STARTED: 10/7/87 DRILLING COMPLETED: 10/7/87

TOTAL DEPTH DRILLED: 39 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Split Spoon, Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 5 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: None DRILLING METHOD: Hollow Stem Auger

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Kent HELPER: Quentin

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
	5	7	2.0	2-3-	Silt, light brown, dry.
				3-4	
	10	12	2.0	4-9-	Sand, fine, light brown with 20-25 percent silt.
				17-26	
	15	17	2.0	4-4-	Same as above.
				5-6	
	20	22	2.0	5-6-	Same as above, wet.
				9-12	
	25	27	2.0	2-6-	Same as above with 10-15 percent silt.
				11-14	
	30	32	2.0	3-5-	Sand, fine, brown with 50 percent silt.
				7-9	
	35	37	2.0	3-6-	Sand, fine to medium with 5 percent silt.
				9-12	

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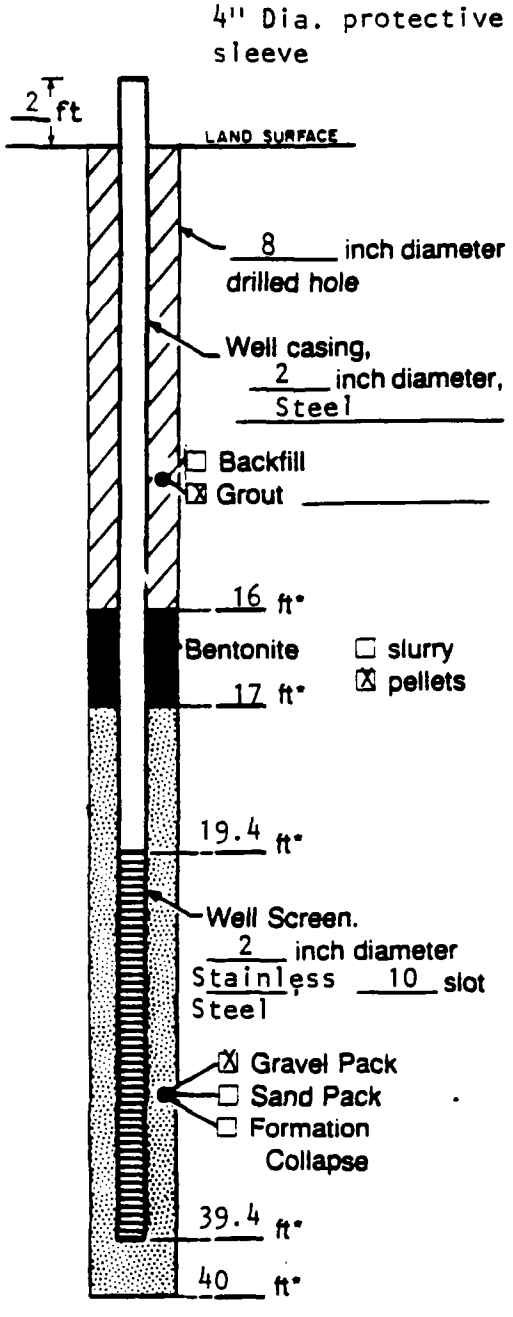
Ground-Water Consultants

WELL CONSTRUCTION LOG



Measuring Point is Top of Well Casing Unless Otherwise Noted.

*Depth Below Land Surface

Project Monsanto/N0808SG3 Well GM-58A

Town/City Sauget

County St. Clair State Illinois

Permit No. _____

Land-Surface Elevation

and Datum _____ feet ☐ surveyed

_____ ☐ estimated

Installation Dates(s) 10/7/87

Drilling Method Hollow Stem Auger

Drilling Contractor John Mathes & Associates, Inc.

Drilling Fluid None

Development Techniques(s) and Date(s)
Surging with compressed air
10/15/87

Fluid Loss During Drilling ~50 gallons

Water Removed During Development 100 gallons

Static Depth to Water 20 feet below M.P.

Pumping Depth to Water _____ feet below M.P.

Pumping Duration _____ hours

Yield 1-2 gpm Date _____

Specific Capacity _____ gpm/ft

Well Purpose Ground water monitoring in the "shallow" zone.

Remarks

Prepared by Brian A. Blum

SAMPLE/CORE LOG

BORING/WELL: GM-59A PROJECT NO: NO308SG3 PAGE: 1

SITE LOCATION: Monsanto Company Sauget, Illinois DRILLING STARTED: 10/8/87 DRILLING COMPLETED: 10/8/87

TOTAL DEPTH DRILLED: 39 ft HOLE DIAMETER: 8 in. TYPE OF SAMPLE/ CORING DEVICE: Split Spoon Core Barrel

LENGTH & DIAMETER OF CORING DEVICE: 2' x 2" SAMPLING INTERVAL: 5 ft

LAND-SURFACE ELEVATION: { } SURVEYED { } ESTIMATED DATUM:

DRILLING FLUID USED: None DRILLING METHOD: Hollow Stem Auger

DRILLING CONTRACTOR: John Mathes & Assoc. DRILLER: Kent HELPER: Quentin

PREPARED BY: B. Blum HAMMER WEIGHT: 140 lb HAMMER DROP: 30 in.

SAMPLE NO	SAMPLE DEPTH		CORE RECVRY	BLOW COUNTS	SAMPLE/CORE DESCRIPTION
	FROM	TO			
	5	7	2	3-6-	Sand, very fine, tan; with lenses of silt, dry.
				9-14	
	10	12	2	4-8-	Silt, brown, dry.
				12-13	
	15	17	2	5-6-	Sand, very fine, tan; with lenses of silt.
				7-8	
	20	22	2	0-1-	Sand, fine, brown; with 10-15 percent silt, moist.
				2-4	
	25	27	2	1-2-	Sand, fine, brown; well sorted with a lens of silt.
				8-11	
	30	32	2	2-3-	Same as above.
				12-15	
	35	37	2	2-3-	Sand, fine, brown; with 10 to 15 percent silt.
				9-13	